

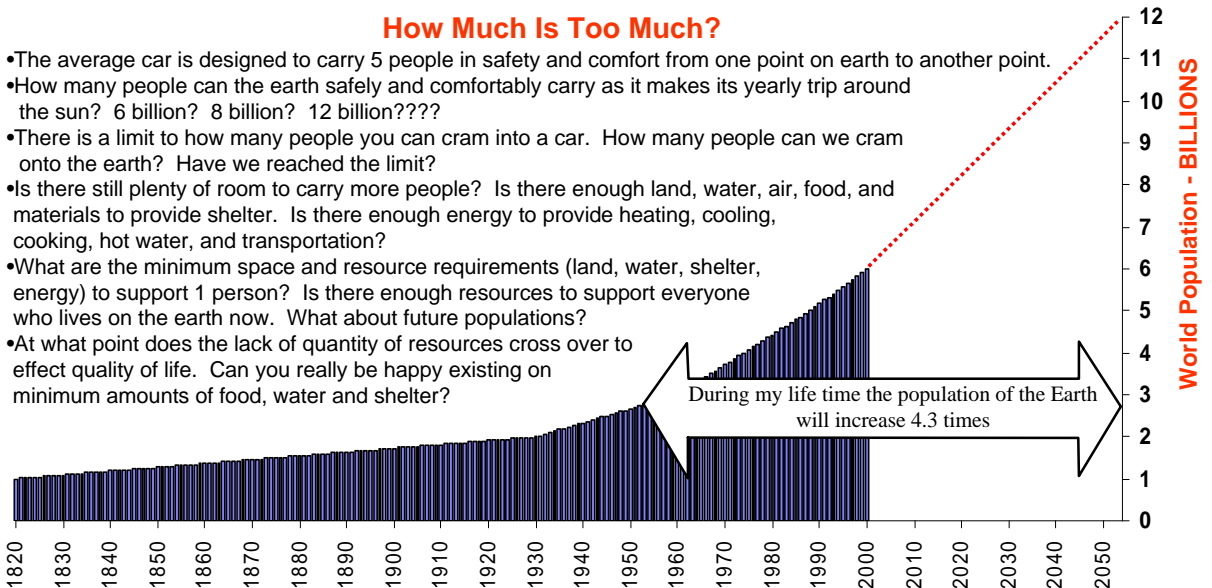
Simple guide to: Energy & Sustainability

Friday, February 20, 2004

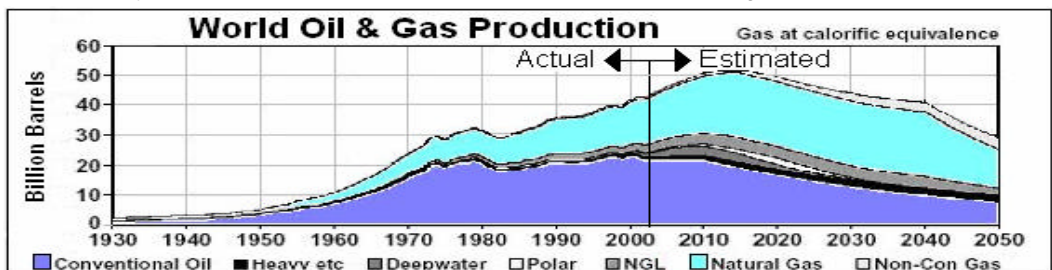
Why we should save energy & live Sustainability

How Much Is Too Much?

- The average car is designed to carry 5 people in safety and comfort from one point on earth to another point.
- How many people can the earth safely and comfortably carry as it makes its yearly trip around the sun? 6 billion? 8 billion? 12 billion????
- There is a limit to how many people you can cram into a car. How many people can we cram onto the earth? Have we reached the limit?
- Is there still plenty of room to carry more people? Is there enough land, water, air, food, and materials to provide shelter. Is there enough energy to provide heating, cooling, cooking, hot water, and transportation?
- What are the minimum space and resource requirements (land, water, shelter, energy) to support 1 person? Is there enough resources to support everyone who lives on the earth now. What about future populations?
- At what point does the lack of quantity of resources cross over to effect quality of life. Can you really be happy existing on minimum amounts of food, water and shelter?



- 10,000 people arrive on earth each hour, 24 hours a day, 365 days a year. The current population of the earth is **6.3 billion people**. By 2060 at current rates of growth there will be **12 billion people**.
- Right now one third of the worlds population suffers from poverty, hunger, disease and malnutrition.
- A billion people in the world cannot find jobs or work at jobs that cannot provide enough income to take care of themselves and their families. When the industrial revolution started, labor was overworked and scarce. Today people have become the abundant resource and nature is becoming scarce.
- Freshwater ecosystems are being destroyed at the rate of 6% a year.
- One-half of the sickness in the world is due to water borne diseases.
- 40% of the world's population is running out of fresh water.
- In the last 50 years the world has lost 25% of its topsoil, and 30% of its forest cover.
- In the last 30 years 1/3 of the planet's natural resources have been used.
- Each day industry processes material equal to 20 times the weight of each person. Only 6% of the material processed gets turned into usable products which are designed with a short life span.
- Buildings use 1/2 of all the material resources in the world.
- Carbon dioxide readings are the highest in 420,000 years according to ice core readings. Carbon from the burning of fossil fuels has warmed the air and water. The 1990s were the warmest decade since the beginning of data collection. Recent weather extremes are related to global warming.
- 80% of our current energy use comes from fossil fuels which took millions of years to make and are in limited supply. Oil production is expected to peak in 2010 and natural gas in 2020.



- Autos are the largest industry in the world and are responsible for pavement of an area equal to all the farm land in Ohio, Indiana, and Pennsylvania; using 8 million barrels of oil a day (~450 gal./person /yr), they create noise and pollution in all cities, increase lung disease, & emitted 1/4 of all greenhouse gases. "The contemporary automobile, after a century of engineering, is embarrassingly inefficient: Of the energy in the fuel it consumes, at least 80 percent is lost, mainly in the engine's heat and exhaust, so that at most only 20 percent is actually used to turn the wheels. Of the resulting forces, 95 percent moves the car, while only 5 percent moves the driver, ... Five percent of 20 percent is one percent --- not a gratifying result from American cars that burn their own weight in gasoline every year." – "Natural Capitalism" by Hawkins & Lovins, P. 24

Details

People

Water

Land

Air

Energy

Vehicles

Simple guide to: **Energy & Sustainability Continued**

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What YOU can do at work	Energy	<ul style="list-style-type: none"> • Save energy in the office by turning off lights and equipment that is not in use, especially at the end of each work day. • Request and use energy efficient office equipment that meets EPA Energy Star requirements: computers, LCD monitors, printers, etc.. • When it is time to upgrade your computer request a laptop that can be plugged into a docking station and monitor. Laptops use at least 1/6 the power of a desktop computer. • Use teleconferencing, video teleconferencing and web conferencing to attend and hold meetings instead of traveling.
	Resources & Materials	<ul style="list-style-type: none"> • Use electronic documents and email instead of paper to process and share information. • File your work electronically on your computer hard drive and back it up on network drives. Resist the urge to create notebooks full of paper. • Scan important paper documents and recycle all paper that comes across your desk. • Get rid of your trash can. There is no trash in nature ... waste = food. Recycle aluminum cans, cardboard, plastic bottles, batteries, toner and ink cartridges. If your office does not have recycling systems, help to create them and encourage your fellow employees to use them. • <u>Take a hard look at your job responsibilities.</u> Chances are your work has impact on the work of others around you and ultimately leads toward your organization's purchase of materials or services or providing of materials and services to others. Anything you can do increase efficiency of material use and service providing will reduce impact on the environment. Look for better ways of doing things or even look for ways of not having to do things. This has the added benefit of also saving organization \$s.
	Buildings	<p><u>If your work involves buildings there are many things you can do to be more sustainable:</u></p> <ul style="list-style-type: none"> • To meet space requirements ... rearrange people and furniture 1st, renovate existing space 2nd, build new only as a last resort. For renovation and new construction do the following: <ul style="list-style-type: none"> <input type="checkbox"/> Recycle construction waste: clean fill (brick, concrete, block & tile), metal (rebar, ceiling grid, light fixtures, ductwork, pipe, metal studs & structural steel), wood, carpet and cardboard. <input type="checkbox"/> Reuse, sell or donate existing building components that still have value (plumbing fixtures, mill work, windows, doors & hardware). <input type="checkbox"/> Invest in a modular office furniture system which can be reused over and over. <input type="checkbox"/> Use movable/reusable wall systems instead of drywall which is difficult to recycle. <input type="checkbox"/> Design all spaces to use daylighting and install dimmable electronic ballasts controlled by photosensors. Use occupancy sensors to control lighting in all spaces. <input type="checkbox"/> Use passive solar heating in heat dominated buildings (warehouses, shops, small offices). <input type="checkbox"/> Use locally available materials for construction to minimize transportation. <input type="checkbox"/> Use durable, easily maintained materials inside and out to minimize future replacement. <input type="checkbox"/> Choose materials with recycled content which can easily be recycled at the end of their life span. <input type="checkbox"/> Use non-toxic low or no VOC interior finishes (paint, flooring, carpet, adhesives and wall coverings). <input type="checkbox"/> Use energy efficient motors for all HVAC equipment. Use variable frequency drives where applicable. <input type="checkbox"/> Consider waterless urinals and other water-saving plumbing fixtures & devices.
What YOU can do at home	Energy & Materials	<ul style="list-style-type: none"> • <u>Take a hard look at your housing and material purchases</u> and "right size" your life. Part of the American dream has been to obtain a large home full of material goods with the most desirable cars parked in the driveway (the multi-car garage is usually full of "things" you no longer use). By the time this dream is met, you no longer need all this space (the children are gone) you are nearing retirement and your accumulation of material goods "things" now own you in terms of time and maintenance. • Houses, cars and material goods take energy and materials to make and maintain. The more you buy, the more stress you put on the natural environment. All these "things" have to come from somewhere and all these "things" have to go somewhere. The world is running out of somewhere. • "Right size" your life ... shoot for quality, durability and not quantity and trendy in the "things" you buy. • Size your house and vehicles for your real needs not your "perceived" needs. • Buy a renewable energy system (photovoltaics or wind power) for your home and grow some food....
	Vehicles	<ul style="list-style-type: none"> • Use less gas ... THIS IS ONE OF THE MOST IMPORTANT THINGS YOU CAN DO TO PROMOTE SUSTAINABLE LIVING. <u>Take a hard look at the vehicle(s)</u> you own and how you use them. Do you really need to transport two+ tons of metal along with yourself when going from point A to B. Share rides, use mass transit, use a fuel efficient car to get to work or don't commute at all, live close to work. • Consider buying a hybrid gas/electric car. They are twice as efficient and reduce environmental impact. • Keep your car longer (10+ years instead of 3) and maintain it well. Making a new car requires large amounts of material and energy & requires another "somewhere" to bury its non-recyclable components.